NATIONAL TRANSPORTATION SAFETY BOARD

WASHINGTON, D.C. 20594

PIPELINE ACCIDENT REPORT

COLUMBIA GAS OF VIRGINIA, INC.
NATURAL GAS EXPLOSION AND FIRE
STANARDSVILLE, VIRGINIA
OCTOBER 24, 1979

NTSB-PAR-80-3

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16. Abstract

At 10:12 a.m., e.d.t., on October 24, 1979, an explosion and fire destroyed the Greene County Clerk's office building and the Greene County Courthouse, gutted a connecting building which was under construction, and damaged nearby buildings in Stanardsville, Virginia. Thirteen persons were injured and the property damage was extensive.

The National Transportation Safety Board determines that the probable cause of the accident was the rupturing of a natural gas service line by excavation equipment, which permitted the unrestricted escape of gas under 15-psig pressure into the basement of the building where it was ignited by an undetermined source. Contributing to the accident were the lack of a "one-call" notification system, the failure of the county authorities through the architect to include the location of the service line on the construction blueprints and to notify the gas company of the planned excavation, and the absence of an installed excess flow valve in the service line. The gas company and the general contractor, who were both aware of the construction activities and of the existence of active gas lines in the area, also contributed to the accident by failing to communicate with each other to determine the location of the gas line.

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Adopted: June 10, 1980

COLUMBIA GAS OF VIRGINIA, INC.
NATURAL GAS EXPLOSION AND FIRE
STANARDSVILLE, VIRGINIA
OCTOBER 24, 1979

SYNOPSIS

At 10:12 a.m., e.d.t., on October 24, 1979, an explosion and fire destroyed the Greene County Clerk's office building and the Greene County Courthouse, gutted a connecting building which was under construction, and damaged nearby buildings in Stanardsville, Virginia. Thirteen persons were injured and the property damage was extensive.

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INVESTIGATION

The Accident

On or about October 20, 1979, a contractor began to use a backhoe to excavate on the south and west sides of a building under construction which was to join the Greene County Courthouse and the Greene County Clerk's office building in Stanardsville, Virginia. (See figure 1.) On October 23, the contractor was excavating on the west side of the county office building when it struck a segment of an abandoned natural gas service line which was located approximately 24 inches south of an active natural gas service line. After the backhoe bucket hit the abandoned line segment, two construction workers went down to the basement of the building and verified that it was an inactive, abandoned line. Excavation work continued the next day and about 10 a.m., the same backhoe bucket snagged the active, 1 1/4-inch-diameter, coated, steel service line that supplied natural gas to the office building from a gas main under Ford Avenue.

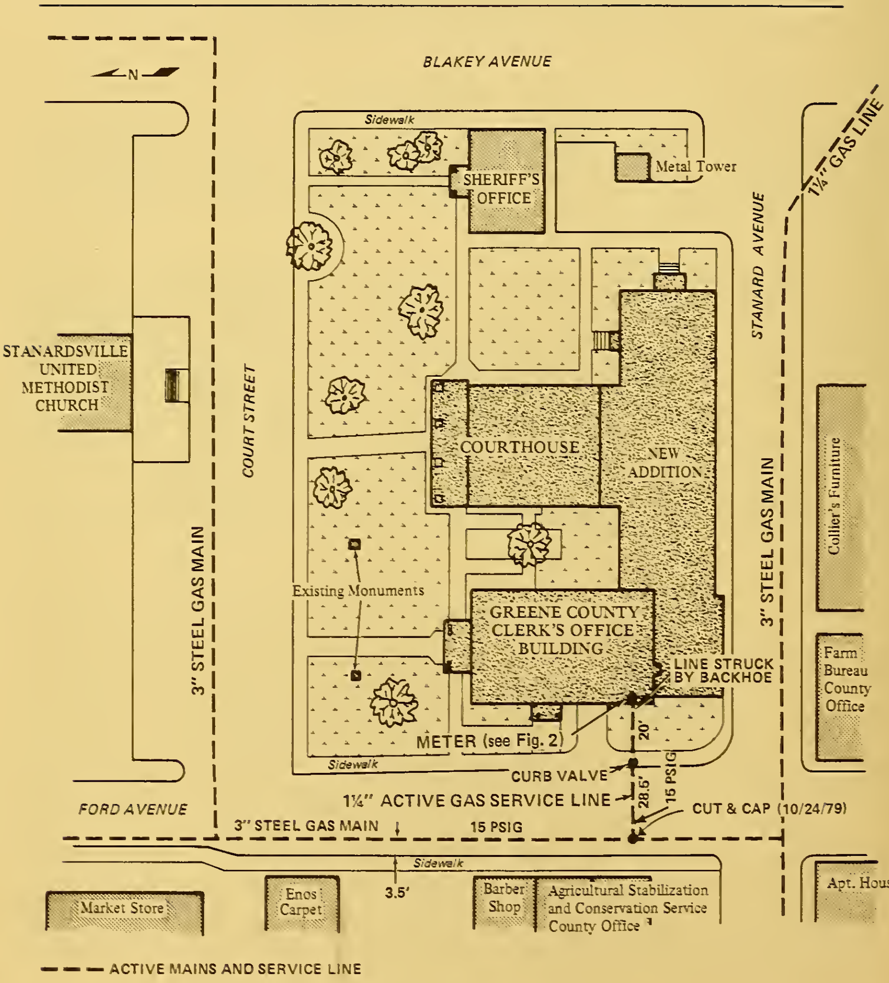

Figure 1.—Plan view of accident site.

In a statement given on November 28, 1979, the backhoe operator said that "we struck a short pipe but didn't strike it heavily--it was just off to the side of one of the footers and it was dead pipe coming out of the building, and before that, down near the new addition, we knew other pipes were there but we didn't hit them." Also, the operator stated that "we hit the pipe [active service line] . . . and fellow employees were standing watching the bucket and saw that when I hit the pipe that it was too late--it had already bent. We heard the gas leaking inside [the building]."

The active service line was buried under about 24 inches of soil. The backhoe bucket bent the active service line and caused it to pull out of the office building wall about 3 inches. (See figures 2 and 3.) The resulting tension on the active service line caused it to crack in a threaded pipe connection at the gas meter in the basement of the office building. Natural gas at 15-psig pressure escaped from the crack into the basement of the building.

Immediately after the active service line was snagged, a construction company superintendent heard the sound of escaping gas, and he ran inside the office building and warned its occupants of the gas leak; they immediately evacuated the building. Seconds later, the superintendent telephoned Columbia Gas of Virginia, Inc., (gas company) at its Culpeper, Virginia, office and reported the gas leak. The gas company log showed this call was received at 10:10 a.m. This first telephone call received by the gas company from the contractor was followed by a second telephone call from the Greene County Sheriff's office. After making telephone calls to the local fire and police departments, and after trying to locate the curb valve for the service line, the superintendent and two men entered the office building to attempt to shut off the flow of natural gas. A bystander had told them that there was a shutoff valve at the gas meter in the basement.

One of the three men said that when they reached the basement, the smell of natural gas was strong and that they considered turning around and leaving. However, with a wrench, they attempted to shut off the valve located on the service line next to the meter at the foundation wall. (See figure 2.) One of the men said that he felt natural gas blowing strongly in his face while he tried to turn the valve. The wrench slipped from his hands, and while he was attempting to retrieve it, an explosion occurred. Although injured, the three men were able to escape from the building.

The explosion blew away the side wall of the office building just above the gas meter. (See figure 4.) An ensuing fire severely damaged the office building, which housed most of the county government offices and which was constructed in the early 1930's, the courthouse, which was constructed in the 1830's, and the addition that was under construction. (See figure 5.) Twelve minutes elapsed from the time the service line was struck until the explosion occurred. At 10:12 a.m., the Stanardsville Volunteer Fire Department received the first fire alarm; its equipment arrived at the site within 3 minutes and immediately attempted to control the fire.

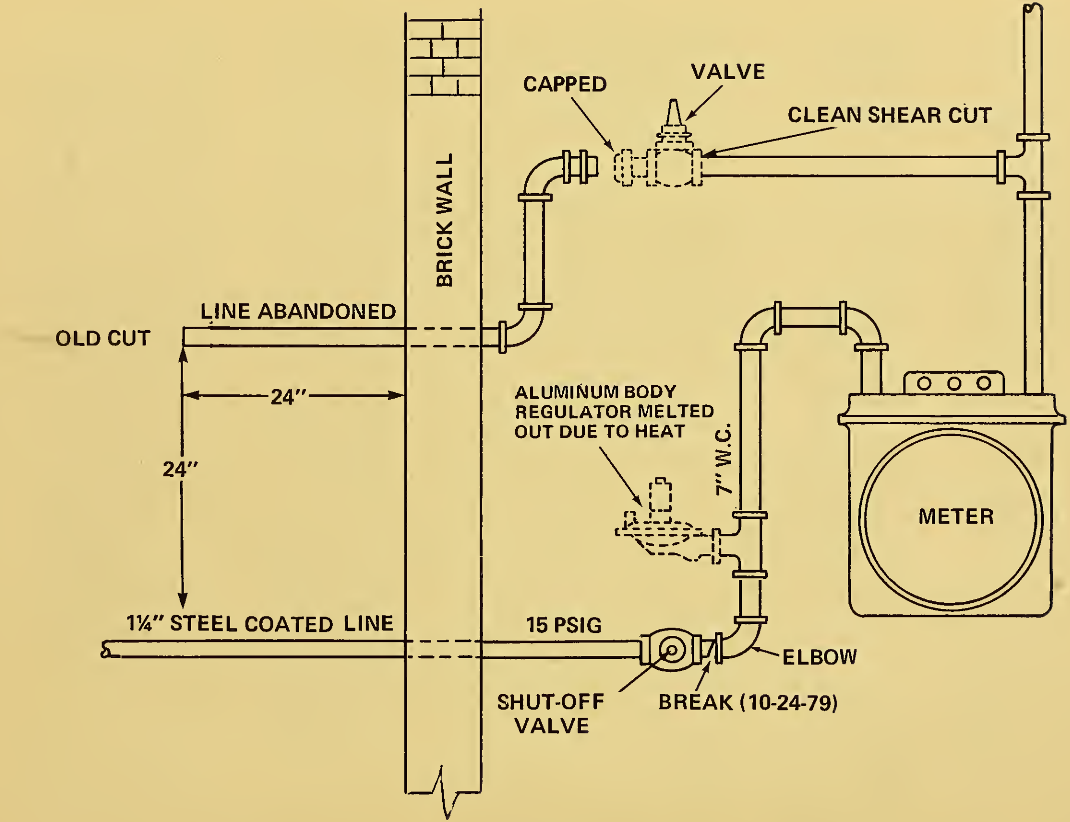

Figure 2.—Gas meter profile assembly indicating location of break in service line.

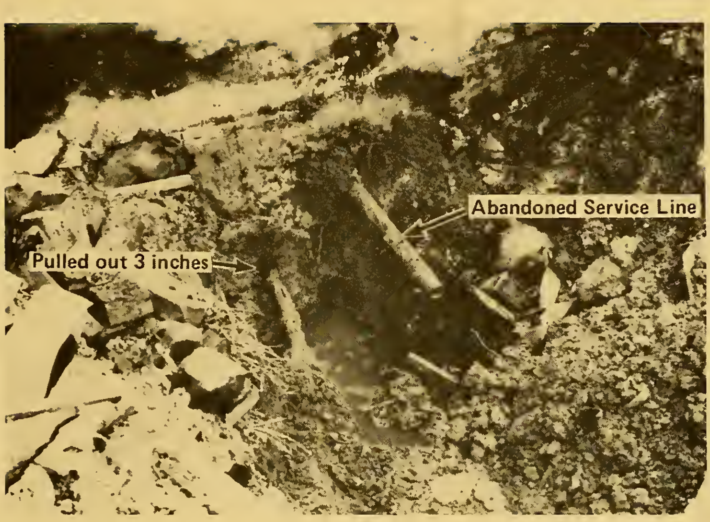

Figure 3.--Eastward view of the active, snagged service line and abandoned service line.

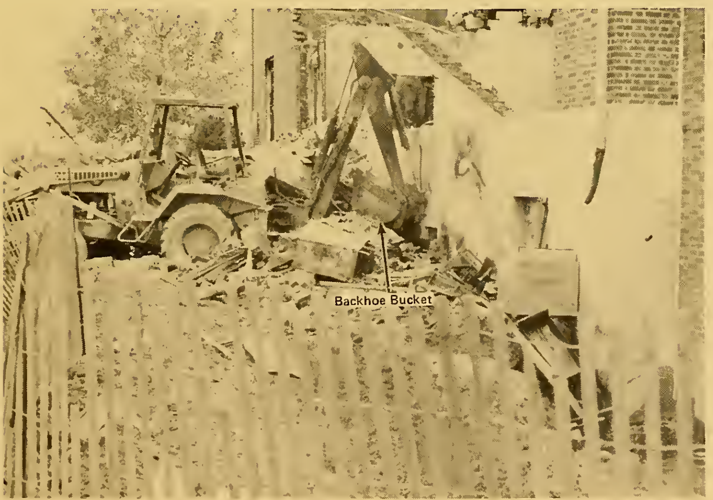

Figure 4.--View of office building's west wall and backhoe involved in accident.

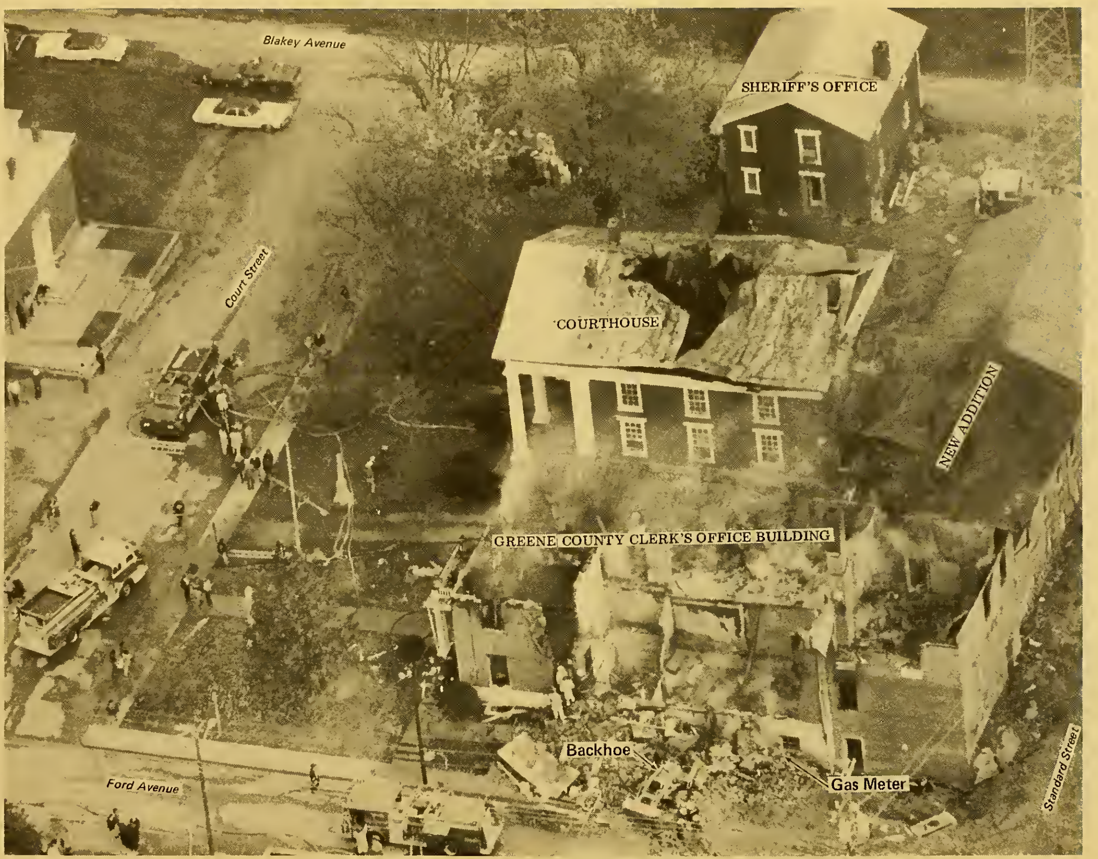

Figure 5.--Aerial view of accident site.

At 10:12 a.m., the gas company called the sheriff's office to inquire about the situation and was advised that an explosion had just occurred and that a fire was in progress. The gas company immediately contacted Columbia Gas Transmission Corporation's (Columbia Gas) Bickers Compression Station, 1/ located about 3 miles from the accident site, to determine if its personnel could assist at the accident site. Because the gas company did not have any employees at the accident site and as a precaution against another explosion, gas company supervisors, while en route to the accident site at 10:25 a.m., requested Columbia Gas to shut off the flow of natural gas to the town of Stanardsville from the compression station. Columbia Gas, under orders from the gas company, shut off the valve at the town border station and "blew the line down" to reduce pressure in the gas system. This operation was completed at about 10:45 a.m., and affected service to all of the gas system's 157 customers in the town.

At 10:50 a.m., the first gas company personnel arrived at the scene of the accident and attempted to locate the curb valve 2/ in order to shut off the flow of natural gas to the building. They were hampered by debris from the explosion. At 10:55 a.m., more gas company employees arrived and immediately began to check for accumulations of natural gas in nearby buildings. At 12:20 p.m., after excavation, the service line to the office building was cut where it joined the gas main, and the main was capped to stop the flow of residual gas. Other gas company personnel began to turn off all gas meters in the area. The fire was extinguished at 2 p.m. At 3 p.m., plans were initiated to reestablish service to all customers, and at 3:20 p.m., natural gas was turned back on from the Bickers Compression Station. By 11:45 p.m., all but 21 commercial customers, who had closed for business for the evening, had natural gas service restored. Service to the commercial customers was restored the following day.

Injuries to Persons

Injuries	Construction company personnel	Fire personnel	County personnel	Bystanders	Total
Fatal	0	0	0	0	0
Nonfatal	6	2	1	4	13
Total	6	2	1	4	13

1/ The Columbia Gas Bickers Compression Station is a measuring-regulating station. This station measures the volume of natural gas piped from Columbia Gas to the gas company for resale in the Stanardsville area. The station also regulates the 15-lb pressure serving the town's 157 customers. When the inlet or outlet valve in this station is closed, the gas service to all customers in the area is terminated. The inlet pressure to the station is 650 psig for winter operation and 450 psig for summer operation.

2/ Curb valve or curb cock is a manually operated valve to stop the flow of natural gas and is installed as a safety control in case of fire or other damage to the premises. Curb valves have a rectangular or square head for turning with a curb cock wrench or long-stem key with handle. These valves are generally located near the curb or property line in a readily accessible location.

Damage to Pipeline

After the service line was uncovered, investigators found that it had a severe bow, about 12 inches from the horizontal. When debris and water were cleaned off the gas meter, investigators found that the service line to the meter was cracked at an elbow just downstream from the meter's shutoff valve. (See figures 2 and 6.)

Other Damage

In addition to structural damage to the buildings, an automobile was burned, window breakage was widespread across Ford Avenue, and electric, telephone, water, and sewer utilities were damaged.

The Greene County Clerk's office building housed offices of the Clerk of the Circuit Court of Greene County, as well as constitutional offices of the Commonwealth's Attorney, the County Treasurer, Commissioner of the Revenue, and Superintendent of Schools. Other county agencies, including the Zoning Board, County Administrator, County Agent, and the offices of the Clerks of the General District Court and the Juvenile and Domestic Relations Court, were also housed in the office building. Many of the records kept in this building were destroyed.

Pipeline System

The inlet pressure on the meter-regulator was 15 psig and the outlet pressure was 7 inches of water column (1/4 psig). This was the only gas meter in the courthouse complex.

An excess flow valve 3/ was not installed in the service line to prevent the flow of gas in the event of a service line rupture.

The total length of the service line from the gas main to the customer's meter was 48 1/2 feet. (See figure 1.) This line was connected to the gas main with a weld-on tapping tee. At the time of the accident, the 20-foot-long, 1 1/4-inch-diameter damaged service line segment from the meter and regulator 4/ to the curb valve at the property line was considered by the gas company to be a customer's line. The county had no records of the installation or replacement dates of this line nor were records of its maintenance kept. The county always contracts for repairs and maintenance of its service lines.

The gas company considered the 28.5-foot-long service line segment from the main to the curb valve to be under its jurisdiction and ownership. The gas company had records for this line and it also had records for the inspections and operation of the customer's service line. However, the gas company did not have a map that

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3/ An excess flow valve is a safety device usually installed at the intersection of the service line with the main line. The valve automatically and immediately will shut off gas flow at the main in the event of a service line rupture, preventing hazardous blowing of gas and preventing loss of pressure in the main until repairs are made and service line pressure restored.

4/ The function of this regulator was to reduce the incoming natural gas pressure from 15 psig to 7 inches water column (1/4 psig).

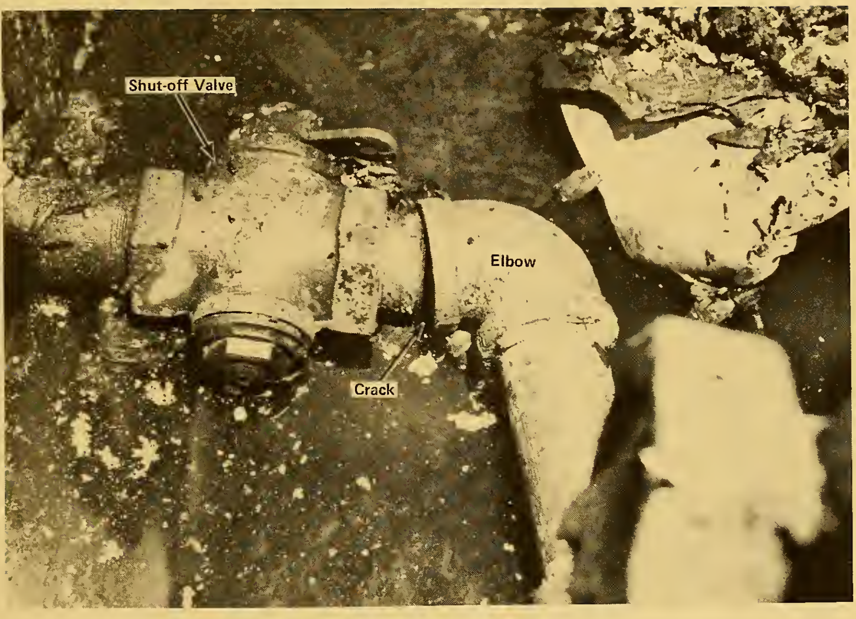

Figure 6.—Closeup view of the shutoff valve, crack, and elbow.

indicated the exact location of the service line. The gas company does not utilize maps for the location of company-owned service lines. The gas company, however, has maps for gas mains. Gas company records revealed that the main in the immediate area of the accident was replaced in 1962 and that the service line was replaced the same year. The main was successfully tested on November 1, 1962, at 100 psig for 12 hours. On May 7, 1976, the gas company conducted a leak survey in the area and found no leaks. Earlier in 1979, the gas company repaired five small leaks that were found in the general area of the accident.

The gas company personnel regularly are in town reading gas meters and, once or twice a week, checking the town to see if there is a malfunction in the distribution system. In emergencies, the gas company utilizes the permanent personnel from Columbia Gas' Bickers Compressor Station. This mutual exchange of personnel is available because Columbia Gas and the gas company are owned by the same parent company.

Meteorological Information

At the time of the accident, the temperature was in the 40's with partly cloudy skies and moderate winds.

Fire

A furnace pilot light located about 7 feet from the service line in the basement probably ignited the gas; however, the exact source of ignition could not be determined.

The fire was intense, fueled by the escape of residual natural gas and the old, dry timber of the destroyed building. Firefighters did not use all available firehoses to extinguish the fire because of a lack of an adequate water supply from the water mains. Additional water had to be tanked in from nearby towns. Approximately 18 fire companies responded to the emergency, but not all were able to help because of the shortage of water. The gas main was shut off at 12:20 p.m., and the fire was extinguished about 2 p.m.

Medical and Pathological Information

Injuries to the 13 persons ranged from cuts, bruises, and broken bones caused by flying debris, to burns from the fire.

Survival Aspects

Except for the three construction company employees who were in the basement of the building at the time of the explosion, the other injured persons were standing near or across the street from the west wall of the office building. The injured persons were taken to the nearest hospital for treatment.

Tests and Research

The abandoned line was about 2 feet long coming out of the building wall and was cut at the end. Examination of this cut indicated that it was cut sometime in the past, probably when this entire line was abandoned. County officials could not determine when this line had been cut and capped. Examination of the excavated area at the time of the accident revealed that the abandoned line was just slightly touched by the backhoe bucket, enough for the equipment operator to notice that he had hit an obstruction, but not enough to even bend this segment noticeably. Further excavation of the area, after the accident, revealed additional segments of this line but they were not in the path of the backhoe excavation.

Other Information

Construction of the addition to the courthouse and office building began about 9 months before the accident. Neither the Greene County authorities nor the architect invited gas company representatives to any meetings nor did they meet with them onsite to determine the gas line location before this excavation work began. The architect 5/ of the Greene County project had several meetings with the contractor about progress of the project which included progress reports, quality control, cost for temporary power, water, heating, security of the building while under construction, materials, storage, project records, scheduling, and weather protection, but nothing had been discussed about the existence of natural gas service lines in the area.

Neither the contractor, Greene County, nor the architect asked the gas company to mark or otherwise locate the service line before the excavation began. However, the subcontractor for the drainage and storm sewer asked the gas company to trace all the lines in Stanard Avenue. The gas company traced the main in Stanard Avenue and also the main where it came in from Ford Avenue into Stanard Avenue; this was very close to where the backhoe snagged the 1 1/4-inch active service line.

After the accident the contractor indicated that he did not know of any abandoned lines or active service lines because they were not shown in the architect's blueprints. The contractor also indicated that the excavation was a few minutes from completion when the backhoe bucket hit the active service line.

At the accident site, while a Safety Board investigator was gathering information relating to the accident, the gas company area manager told the investigator that he did not consider the customer's service line from the curb valve to the customer's meter to be the gas company's responsibility. Information requested by the investigator from the area manager at the accident site, and later submitted to the Safety Board, supported the verbal information given by this official. Based on the verbal and submitted information, the Safety Board issued two pipeline safety recommendations to the gas company. A subsequent meeting on May 5, 1980, with the Safety Board staff and gas company officials indicated that there was a conflict of information and communication among some gas company officials. As a result of this meeting, the gas company submitted additional information to the Safety Board stating that the gas company considers the Greene County office buildings complex a "designated building" 6/ pursuant to company policy. In a designated building, gas facilities, including the entire service line, are inspected annually. The last three inspections of the Greene County buildings were performed on November 1, 1977, November 1, 1978, and September 13, 1979. For a designated building, the gas company (dating to 1962) has requirements and specifications on the installation and maintenance of customer-owned service lines, and requires that the customer-owned lines be constructed and tested in compliance with its operating standards and that the line be operated and maintained in compliance with the gas company's policy.

5/ The architect is the person lawfully licensed to practice architecture, identified as such in the Greene County's Owner-Contract Agreement.

6/ The following definition was taken from the gas company's Corporate Policy and Procedure Manual--General Requirements: Designated Buildings are those buildings outside the business district, which field management determines are required to be inspected each calendar year because of the occupancy characteristics. These shall include, but not be limited to, elementary and secondary schools, hospitals, and municipal auditoriums.

During the construction, the project contractor had installed aboveground a temporary plastic gas service line from gas piping near the existing gas meter in the county office building to a furnace that had to be relocated in the courthouse building because of the construction. At the request of Greene County personnel and gas company employees, the contractor later replaced the plastic gas line with a steel pipe, which is less vulnerable to puncture and other damages. Everyone present at that time--the county, the contractor, the architect, and the gas company--knew that gas was being supplied in the work area. Also during the construction, the gas company had repaired some nonconstruction-related gas leaks in the courthouse square area.

Card records 7/ submitted by the gas company to the Safety Board for the courthouse complex service line, indicated a different pipe length measurement from the actual length measured at the accident site by gas company personnel. In addition, the general foreman for the excavation of a drainage line for the courthouse complex stated that the gas company "traced the main where it came in from Ford into Stanard," and that "they traced [the main], but [it] was marked and when we excavated, they were about 3 feet off of their markings."

At the time of the accident a "one-call" system for excavation notification was not in operation in Greene County; however, the manager of "Miss Utility" in Richmond, Virginia, stated that it was in use in the adjacent counties of Madison and Culpeper. About 44 of the 90 Virginia counties are currently using a "one-call" system.

The gas company was approached by the manager of "Miss Utility," the "one-call" system operating in central Virginia, in the spring of 1978, again in the spring of 1979, and again after the accident, and asked if it would be willing to cooperate in the expansion of the "one-call" notification system into Greene County. The gas company replied that due to the small number of facilities operating in that area, membership was not justifiable at that time.

Accident data submitted to the Materials Transportation Bureau (MTB) of the U.S. Department of Transportation by natural gas distribution pipeline operators indicate that pipeline ruptures by "outside force" damage is the primary cause of pipeline accidents. "Outside force" damage includes damage from excavation equipment, farm equipment, motor vehicles, earth movement, etc., of which excavation damage is the major cause.

7/ Card records are cards kept by the gas company to accurately identify the location of a pipeline. Information on the card records includes address, distance from mainline to curb box, depth of ditch, width of ditch, type of soil and excavation conditions, type of surface, date restored, etc.

ANALYSIS

Preconstruction Meetings and the "One-Call" System

Since construction of the addition to the courthouse and the office building had been in progress for almost 9 months before the accident, there had been ample time for someone to mark properly all the utility lines in the construction area. The gas service line was not marked by the gas company before the excavation began because neither the architect, Greene County, nor the contractor asked the gas company to do so. Excavation at the time of the accident was going on around the area where the customer's active service line extended from the outlet side of the curb valve to the inlet side of the customer's meter.

The contractor's backhoe operator and the contractor's superintendent should have been aware that there was an active natural gas service line in the excavation area. During the construction, the contractor had replaced the temporary plastic line which connected the gas meter piping--the only gas meter in the courthouse complex--to the relocated furnace, and the contractor also had checked the basement when the abandoned service line was slightly struck. The gas company should have become aware of the construction activity when it repaired several gas leaks in the general area and when the gas company and Greene County personnel directed the project contractor to replace the temporary plastic line with a steel pipe.

The gas company believes its use of card records for the location of service lines is more accurate than maps. The gas company believes that if information from those card records is substituted by maps, the maps will not furnish all the information necessary for the proper identification of a service line. However, the card record submitted to the Safety Board for the courthouse complex service line indicated a different pipe length from that actually measured at the accident site by gas company employees. The measurement taken at the accident site was 28.5 feet for the gas company-owned service line and the card record for the same line showed a 33-foot measurement; therefore, in this instance, the card records were not accurate. The gas company should update its maps or card records by performing a survey of its gas distribution system in Stanardsville.

The fact that gas company representatives were not invited to any meetings prevented all parties from being made aware of the need to protect existing gas facilities in the area of the proposed construction. During these meetings, the contractor could have been briefed about the location of underground facilities and could have determined which of the gas utility lines would be in excavation areas. The gas lines could then have been marked before excavation began. Also, at these meetings, the gas company, architect, Greene County, the contractor, and any other utilities involved could have each designated a person to serve as liaison for problems in the field. All four parties--the architect, the contractor, the gas company, and Greene County--had to be aware of active gas service lines in the excavation area, but were all remiss in their obligation to communicate with each other and to notify each other.

Data based on accidents reported under 49 CFR Part 191, "Transportation of Natural and Other Gas by Pipeline; Reports of Leaks," indicate that outside force damage caused by excavation activities is the primary cause of pipeline failure. The Safety Board believes that good communications between excavators and operators of underground facilities is essential for any successful pipeline damage prevention program and that the most effective method of preventing excavation-caused damage to underground facilities is to insure that excavators notify the owners or operators of utility companies in advance of the proposed excavation work so that operators can mark the location of their facilities before excavation begins. The most effective and convenient method for such notification is a "one-call" system. A "one-call" system establishes a center to which an excavator can make one telephone call to notify all the participating underground facility operators of the dates and locations of proposed excavation. The center then alerts each participant about proposed excavations possibly affecting underground facilities to provide an opportunity for each to locate and mark its facilities and to establish liaison with the excavator before excavation begins.

Before the development of the "one-call" system concept, there was usually no effective communication established between excavators and utility companies. The companies considered it the responsibility of the excavator to determine the owner of the underground facilities at an excavation site, to notify each company, and to inquire about the location of each facility. With many utilities often in an area, such as water, sewer, gas, and electric facilities, this was often a formidable task.

The "one-call" system provides the excavator with an easy method of fulfilling his responsibility of notifying all owners of underground facilities. If an excavator gives reasonable advance notice of his plans, owners of underground facilities can locate and mark their facilities promptly and accurately, or can advise the excavators that there are no facilities in the proposed area of excavation.

On April 18, 1973, the Safety Board conducted a symposium, which was attended by representatives of pipeline operators, other underground facility operators, construction companies, labor unions, and government organizations. Following the symposium, on July 27, 1973, the Safety Board issued a special study, "The Prevention of Damage to Pipelines" (NTSB-PSS-73-1).

The study contained recommendations aimed at preventing future damage-related pipeline accidents. The study concluded that pipeline accidents caused by excavation and construction activities can be prevented, but the major effort must come at the local level and must involve the complete cooperation of the operators of underground facilities, the individual contractors, the contractor associations, the local and State governments, and the planners and developers. A "one-call" notification system was identified as the first step in what must be a series of coordinated operations.

On June 7, 1973, the Safety Board recommended that the American Public Works Association (APWA) establish a National Organization of Utilities Coordinating Committee to encourage its local chapters to establish utility coordinating committees and to develop guidelines for regulating and coordinating construction near underground facilities (Safety Recommendation P-73-16). As a result of this recommendation and the excellent work of the APWA's Utility Location and Coordination Council (ULCC), 42 States and U.S. territories now operate 107 "one-call" systems. The ULCC "one-call" system's International Committee has appointed nine regional representatives who are available to consult with community officials around the country to set up a "one-call" system. (See appendix B.)

The Safety Board continues to find that throughout the country, the "one-call" notification system is effective in reducing accidents and damages involving underground facilities. In a 1978 special study, [8] the Safety Board reported that a 1977 survey of "one-call" systems indicated a downward trend in damage to underground facilities after the "one-call" systems were established. In 1972, the first year that the local system was introduced, the gas, electric, telephone, and water utilities serving the two Maryland counties adjacent to the District of Columbia had a total of 2,103 incidents of damage to their underground facilities. During 1976, the last year these statistics were recorded by the "one-call" center, the number of incidents had been reduced by 1,299—a reduction of 61.8 percent. In that same period calls to the "one-call" system had increased tenfold.

Some 23 States now have underground facility damage prevention legislation or regulations which have Statewide applicability. States such as Michigan, Connecticut, and New York have enacted comprehensive laws which apply to all persons engaged in activities likely to interfere with underground pipelines and which require that these persons seek out line-marking service or other information necessary to locate a pipeline before excavation is begun. At the time of the Stanardsville accident, the State of Virginia had passed legislation, the "Underground Utility Damage Prevention Act" (Chapter 10.3), to become effective on July 1, 1980. This legislation will hopefully reduce, if not prevent, accidents such as the one at Stanardsville. (See appendix C.)

Recently, the American Telephone and Telegraph Company issued a study entitled "Another View" which reports the results of a survey of utility contractors on methods of protecting underground facilities. The survey shows that the rising popularity of the various "one-call" systems appears to be directly related to the desire on the part of the contractors for face-to-face dialogue with utility-marking crews. The Safety Board is pleased that owners of underground facilities have taken the initiative in developing and financing a system to reduce the number of pipeline accidents caused by excavation. If owners respond with prompt and accurate pipeline markings, and contractors exercise due care when excavating around underground facilities, such accidents can be prevented.

On November 15, 1979, the Materials Transportation Bureau (MTB) of the U.S. Department of Transportation published in the Federal Register a Notice of Proposed Rulemaking (NPRM) to amend 49 CFR Part 192 to require each gas pipeline operator to implement a damage-prevention program. The NPRM shows that the MTB recognizes excavation damage as a major problem and encourages preconstruction meetings, "one-call" systems, and local ordinances to control excavation. The Safety Board on February 11, 1980, commenting on the NPRM, supported the intent of the rulemaking and offered suggestions to improve the proposed rule.

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[8] "Safe Service Life for Liquid Petroleum Pipelines" (NTSB-PSS-78-1).

On November 30, 1979, Public Law 96-129 amended the National Gas Pipeline Safety Act of 1968. Section 101 of the new law required the Secretary of Transportation, within 12 months, to include in the Federal minimum safety standards a requirement that any operator of pipeline facilities:

> (A) participate in any public safety program—
>
> (i) which provides for notice to pipeline facility operators of proposed demolition, excavation, tunneling, or construction near or affecting such facility;
>
> (ii) which requires such operators to identify specific pipeline facilities which may be affected by the proposed demolition, excavation, tunneling, or construction, for the purpose of preventing damage to such facilities; and
>
> (iii) which the Secretary determines is being carried out in a manner adequate to assure protection against the hazards to that operator's pipeline facilities created by such demolition, excavation, tunneling, or construction; or
>
> (B) to the extent that such a program is not available, take such steps as the Secretary shall prescribe to provide services to the public with respect to that operator's pipeline facilities which are comparable to those which would be available to the public under such a program.

Service Line (Yard Line)

A "yard line" is the piping from the outlet side of a curb valve to the inlet side of the customer's meter. Some companies call it a "customer's service line." Yard lines are usually installed by plumbing contractors in accordance with local plumbing codes; the gas companies install the remainder of the service line from the customer's property line to the natural gas main. Some, but not all, gas companies pressure test the entire service line from the natural gas main to the customer's meter before beginning natural gas service to a customer and during periodic gas leak surveys.

At the accident site the gas company area manager informed the pipeline accident investigator that he did not consider the service line from the curb valve to the customer meter to be the gas company's responsibility. At that time, this position about the customer service line was taken to include design, construction, operation, testing, maintenance and inspection, and therefore, that it was not in compliance with existing Federal regulations. His position was supported by the fact that written information requested at the accident site, and submitted to the Safety Board at a later date, did not clearly indicate any gas company responsibility toward the customer's service line which again implied that the gas company was in violation of the Federal regulations. Relying on the information given at the accident site by the gas company official and by the written information submitted at a later date, the Safety Board on March 10, 1980, issued to the gas company Safety Recommendations Nos. P-80-10 and P-80-11. Title 49 CFR 192.3 defines a "service line" as "a distribution line that transports gas from a common source of supply to (a) a customer's meter or the connection to a customer's piping, whichever is farther downstream, or (b) the connection to a customer's piping if there is no customer meter." 9/ Federal regulations are explicit in directing operators (gas companies) to inspect and operate the "yard line" portion of the service line in the same manner as the operator-owned portion of the service line. The intent of the regulations is not that the operator be responsible for the maintenance of customers' facilities, but that the operator not operate facilities that are not maintained in accordance with 49 CFR Part 192.

The Safety Board has addressed this issue in a previous accident report. 10/ The Board believes that, by regulation, the gas companies are responsible for the operation and inspection of yard piping and that these lines should receive as much attention as primary lines. The Safety Board is aware that the policies of some natural gas companies regarding customers' service lines are not consistent with Federal regulations and believes that these policies should be brought into agreement with the regulations.

As a result of its investigation of the explosion and "yard line" failure that destroyed a one-story brick house in Arlington, Texas, on May 29, 1978, the Safety Board issued the following recommendations on October 29, 1979:

--to the Lone Star Gas Company:

> Change its operating and maintenance plan to include specific procedures to cover the part of the service lines identified under company policy as yard lines to be the same as for company-owned service lines. (Class II, Priority Action) (P-79-32)

--to the Materials Transportation Bureau of the U.S. Department of Transportation:

> Instruct its regional offices and State agencies to immediately direct operators who distinguish yard lines from service lines to incorporate the same inspection, operation, and maintenance of these lines in their operation and maintenance plan as for the company-owned service lines. (Class II, Priority Action) (P-79-33)

The Lone Star Gas Company has advised the Safety Board that it will give Recommendation P-79-32 immediate attention.

Regarding recommendation P-79-33, the MTB replied on April 16, 1980, stating that:

9/ A customer meter is the meter that measures the transfer of natural gas from an operator to a consumer.

10/ "Pipeline Accident Report—Consolidated Edison Company, Explosion at 305 East 45th Street, New York, New York, April 22, 1974" (NTSB-PAR-76-2).

> MTB has instructed its regional offices, as part of their ongoing pipeline inspection activities, to direct this item to the immediate attention of all cognizant gas pipeline operators. The regional offices have also been instructed to contact the appropriate State agency personnel and review with them the definition of service lines in relation to the problem identified by the NTSB investigation. The State agencies are also being instructed to direct operators subject to State jurisdiction to inspect and operate the "yard lines" portion of the service line in the same manner as the operator-owned portion of the service lines.

The MTB recommended that recommendation P-79-33 be "Closed-Acceptable Action." The Safety Board concurred with the MTB recommendation.

Excess Flow Valve

An excess flow valve closes automatically when the gas flow through the valve reaches or exceeds a predetermined flow rate. If an excess flow valve had been installed on the service line at Stanardsville, the gas flow would have been shut off when the service line was ruptured and would have prevented this accident.

The Safety Board pointed out the value of excess flow valves in a 1971 special study. [11] The Safety Board also discussed this need in its accident report on the rupture of a service line in Lake City, Minnesota, on October 30, 1972, [12] and in its previously cited accident report on the rupture of a service line in New York City. In both reports the Safety Board noted that the use of an excess flow valve might have shut off the flow of natural gas after the service lines were ruptured and the resultant explosions and loss of life and property might have been averted or their severity reduced.

The Safety Board has twice recommended that the MTB develop standards for the rapid shutdown of failed pipelines and to study fail-safe devices to stop the flow of natural gas from ruptured lines. As a result of these recommendations, the MTB contracted for a study on the "Rapid Shutdown of Failed Pipeline Systems and Limiting of Pressure to Prevent Pipeline Failure Due to Over Pressure." The study, completed in October 1974, concluded that excess flow valves would improve safety, that they are available and technically feasible, and that they are economically feasible. The MTB is still reviewing the matter to determine what regulatory action it may take.

Many types of excess flow valves are currently available; however, the ones more widely used are the steel ball and magnet type, and the spring type. With normal gas flow through the safety devices, the gas passes around the ball or spring holder. However, when a line rupture occurs and the gas flow increases beyond the preselected flow rate, the ball or spring holder is forced onto the seat, instantly shutting off the flow. When service line repairs have been completed, the safety device automatically returns to the open position, permitting normal flow. An allowable predetermined leakage through the safety device re-pressurizes the service line, balancing the pressure forces on the steel ball or the spring holder. The force of the magnet or spring automatically returns the steel ball to the magnet or the spring holder to normal position. When service line repairs have been completed, to save time the safety device can be quickly and easily reset to the open position. Installations and tests have shown that under normal gas flows, the flow is sufficient to provide a self-cleaning action.

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[11] "Special Study--Effects of Delay In Shutting Down Failed Pipeline Systems and Methods of Providing Rapid Shutdown" (NTSB-PSS-71-1).

[12] "Pipeline Accident Report—Northern States Power Company, Lake City, Minnesota, October 30, 1972" (NTSB-PAR-73-1).

These safety devices protect against: (1) excavation damage to service lines, (2) regulator failure due to damaged diaphragm or inadequate relief capacity, (3) line failure or damage, and (4) excessive energy loss due to line breaks or pilferage. The safety devices also: (1) limit flow to safe capacity, (2) may be safely buried, (3) are self-acting, no actuator needed, (4) are not subject to street vibration, (5) reset automatically, (6) are made of nonreactive materials, (7) can be installed at any angle, and (8) are self-cleaning.

The average cost of such safety devices when installed in new or renewal service lines are as follows:

Design life of service years	Approximate unit cost of excess flow valve	Total cost per year
50	$10	20 ¢
40	$10	25 ¢
30	$10	30 ¢
20	$10	50 ¢

The above value analysis reveals that the protection afforded by an excess flow valve is a good investment.

Properly sized and installed, these safety devices permit normal gas flow well beyond the peak demand of the service. The device does not shut off flow in the event of sudden changes in demand or surge flows. Manufacturers state that field installations and extensive laboratory testing have proven the safety devices to be fail-safe devices, unaffected by temperature, stray electrical currents, or time. Hundreds of thousands of these excess flow devices are already in use throughout the country. Accidents have been prevented when the gas flow was automatically stopped when lines that contained these valves were ruptured. The Safety Board has investigated numerous accidents that we believe could have been prevented, or losses significantly reduced, had excess flow valves been installed. (See appendix D.)

Excess flow valves for gas service lines perform the same function as electrical fuses or circuit breakers do on electric service lines to a home. Fuses and/or circuit breakers have been a mandatory requirement for many years both on a national and local code level.

Gas Company Response to the Accident

The Safety Board is aware that there are a number of smaller communities similar to Stanardsville served by the gas company where there are no gas company employees permanently stationed. It should be the responsibility of the gas company to train the local authorities (police, fire, or emergency units) in these communities to know where shutoff valves are located and to know how to operate them.

In this case, Columbia Gas personnel were located at a compressor station within 3 miles of the accident site. The pipe was broken by the backhoe at 10 a.m., the gas company's Culpeper office was first notified at 10:10 a.m. of the line break, just before the explosion, and that office telephoned the compressor station to request help at the accident site. However, it was not until 10:45 a.m., 33 minutes after the explosion, that the pipeline system was shut down, and it was not until 10:50 a.m. that the first gas company personnel arrived at the accident site. Earlier arrival in this particular case would not have stopped the explosion or the resultant fire and personal injuries, but under different conditions it might have.

CONCLUSIONS

Findings

1. The construction activities for the addition began 9 months before the accident, which was sufficient time to properly identify the exact location of all the underground facilities.

2. The county, owner of the damaged service line, failed to provide the excavation contractor with the precise underground pipeline location. Neither the county's drawings, the contractor's drawings, nor the architect's drawings showed any gas service lines.

3. The gas company was not invited to any project meetings. Such meetings might have established what natural gas lines were in the excavation path and could have prevented this accident.

4. The service line was snagged and ruptured by the contractor's excavation equipment because the equipment operator did not know the location of the underground facility.

5. Natural gas leaked from a crack in the threaded connection of the service line, dispersed throughout the basement of the building, and accumulated until an explosive mixture was reached.

6. No "one-call" system was in effect in the county at the time of the accident; however, a "one-call" system is in effect in some of the adjacent counties.

7. Card record information about the gas company-owned service line differed from actual field information.

8. A properly designed and installed excess flow valve could have prevented this accident.

9. The contractor's decision to evacuate the buildings and the rapidity and effectiveness of the evacuation prevented the loss of lives.

10. The volunteer fire department and the police department combined effectively to evacuate the injured and maintain order in the affected area.

11. The lack of an adequate city water supply hampered the firemen in extinguishing the fire.

Probable Cause

The National Transportation Safety Board determines that the probable cause of the accident was the rupturing of a natural gas service line by excavation equipment, which permitted the unrestricted escape of gas under 15-psig pressure into the basement of the building where it was ignited by an undetermined source. Contributing to the accident were the lack of a "one-call" notification system, the failure of the county authorities through the architect to include the location of the service line on the construction blueprints and to notify the gas company of the planned excavation, and the absence of an installed excess flow valve in the service line. The gas company and the general contractor, who were both aware of the construction activities and of the existence of active gas lines in the area, also contributed to the accident by failing to communicate with each other to determine the location of the gas line.

RECOMMENDATIONS

During its investigation, the National Transportation Safety Board issued the following safety recommendations on March 10, 1980:

--to the Board of Supervisors of Greene County, Virginia:

> Pending the establishment of a "one-call" system, adopt an ordinance to require contractors, utilities, the public, and other excavators to make notification of planned excavation to gas companies whose facilities might be affected by such work. (Class II, Priority Action) (P-80-8)

Cooperate with the utility companies serving the State of Virginia to expand the Central Virginia "one-call" excavation notification system to include Greene County. (Class II, Priority Action) (P-80-9)

--to Columbia Gas of Virginia, Inc.:

Change its operating maintenance plan to include specific procedures to cover the part of the service lines identified under company policy as "customer's service lines" in the same manner as company-owned service lines. (Class II, Priority Action) (P-80-10)

In conjunction with other operators of underground facilities in its service area, extend the established "one-call" notification system to Greene County and other areas of Central Virginia not now covered in the system. (Class II, Priority Action) (P-80-11)

As a result of its complete investigation of this accident, the National Transportation Safety Board made the following recommendations:

—to the American Gas Association:

Advise its member companies of the importance of including in their operating and maintenance plans specific procedures, the same as for company-owned service lines, for the part of a service line identified under various companies' policies as "customer's service lines" or "yard lines." (Class II, Priority Action) (P-80-50)

Encourage its member companies to install excess flow safety valves on all newly installed or renewed high-pressure natural gas service lines in order to minimize a hazardous release of natural gas after a rupture. (Class II, Priority Action) (P-80-51)

Urge its member companies to participate in and encourage improvement in any "one-call" system in areas where their pipelines operate, and help organize and expand systems where they do not exist. (Class II, Priority Action) (P-80-52)

Advise its member companies to require in their emergency procedures the training and equipping of local emergency response agencies for the control of gas distribution pipeline failures in systems where qualified gas company employees cannot respond rapidly. (Class II, Priority Action) (P-80-53)

--to the Materials Transportation Bureau of the U.S. Department of Transportation:

Expedite final action on rulemaking, docket No. PS-59, concerning damage-prevention programs. (Class II, Priority Action) (P-80-54)

Expedite rulemaking to require the installation of excess flow valves on all newly installed or renewed high-pressure gas distribution system service lines. (Class II, Priority Action) (P-80-55)

--to Columbia Gas of Virginia, Inc.:

Update its card records and maps for the gas distribution system in the Stanardsville, Virginia, area to coincide with the actual locations of the area's gas facilities. (Class II, Priority Action) (P-80-56)

Review its card records and maps to determine whether the inaccuracies found in its Stanardsville, Virginia, records exist in other areas, and if appropriate, expedite action to update the records. (Class II, Priority Action) (P-80-57)

Require in its emergency procedures the training and equipping of local emergency response agencies for the control of gas distribution pipeline failures in areas where qualified gas company employees cannot respond rapidly. (Class II, Priority Action) (P-80-58)

BY THE NATIONAL TRANSPORTATION SAFETY BOARD

/s/ JAMES B. KING
Chairman

/s/ FRANCIS H. McADAMS
Member

/s/ PATRICIA A. GOLDMAN
Member

ELWOOD T. DRIVER, Vice Chairman, and G.H. PATRICK BURSLEY, Member, did not participate.

June 10, 1980

APPENDIX A

INVESTIGATION

The National Transportation Safety Board was notified of the accident at 1:30 p.m., e.d.t., on October 24, 1979. The Safety Board immediately dispatched a pipeline safety specialist investigator from its Washington, D.C., headquarters to the accident site.

The Safety Board has considered all facts pertinent to the Safety Board's statutory responsibility to determine the cause or probable cause of the accident and to make recommendations accordingly.

APPENDIX B

Excerpt from the
"1980 Directory--One Call Systems International"
American Public Works Association
Utility Location & Coordination Council

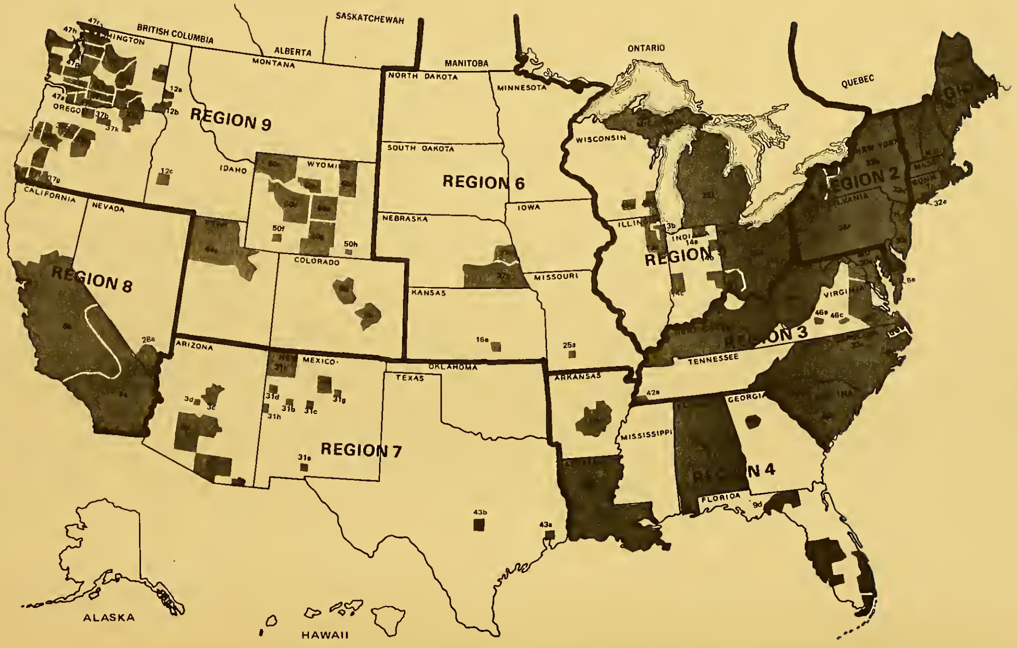

Figure B1.—Locations of "One-Call" Systems in United States

UNITED STATES REGION REPRESENTATIVES

REGION I – [Maine, Vermont, New Hampshire, Massachusetts, Connecticut, Rhode Island]
John Daly, Jr. – "Dig Safe" – 201 Rivermoor Street, Boston, Massachusetts 02132 Tel. # 617-323-9210.

REGION II – [Pennsylvania, New Jersey]
Bill Kiger – "Pennsylvania One Call System" – One Allegheny Square, Suite 720, Pittsburgh, Pennsylvania 15212 Tel. # 412-323-7111.

[New York State]
Edward Lee – "Underground Facilities Protection Organization, Inc." – 3650 James Street, Syracuse, New York 13206 Tel. # 315-479-2504.

[Delaware]
Mel Wyatt – "Miss Utility of Delmarva" – 146 South State Street, Dover, Delaware 19901 Tel. # 302-678-1421.

REGION III [West Virginia, Maryland, Virginia]
George Woods – "Miss Utility" – 3600 West Broad Street, Richmond, Virginia 23230 Tel. # 804-780-0101.

[District of Columbia]
Ray Jenkins – AT&T – 2055 L. Street, N.W.-7th Floor, Washington, D.C. 20036 Tel # 202-457-3246.

[North Carolina, South Carolina, Tennessee, Kentucky]
Mack Lacey – "Bud" – 1408 South 2nd Street, Louisville, Kentucky 40208 Tel. # 502-582-8239.

REGION IV – [Alabama, Mississippi, Louisiana, Arkansas]
Joy Moore – "Miss All" – 55 Bagby Drive, Room 205, Birmingham, Alabama 35209. Tel. # 205-942-1104.

[Florida, Georgia, Puerto Rico]
Ray Afeld – "Call Candy" – 4520 Oakellar Street, Tampa, Florida 33611 Tel. # 813-839-8881.

REGION V – [Ohio, Indiana, Illinois, Wisconsin, Michigan]
Bill Graber – "Ohio Utilities Protection Service" – 55 Public Square, Box 5000, Cleveland, Ohio 44101 Tel. # 216-623-1350 ext. 469.

REGION VI – [Missouri, Iowa, Minnesota]
Larry Pattenaude – "Julie" – 3033 West Jefferson, Suite 218, Joliet, Illinois 60435 Tel. # 815-740-4500.

[North Dakota, South Dakota, Nebraska, Kansas]
Pete Mortenson – "One Call Covers All" – 100 South 19th Street, Building 43, Omaha, Nebraska 68102 Tel. # 402-554-5403.

REGION VII – [Oklahoma, Texas]
George Zincke – "Utility Coordinating Committee for the Metropolitan Houston Area" – 7233 Avenue F, Houston, Texas 77011 Tel. # 713-222-3638.

[Arizona]
George Gilmore – "Blue Stake" – 3033 North 3rd Street, Room 912, Phoenix, Arizona 85102 Tel. # 602-263-3219.

[New Mexico]
Richard Heller – City of Albuquerque – P.O. Box 1293, Albuquerque, New Mexico 87103 Tel. # 505-766-7441.

REGION VIII – [Southern California, Hawaii]
Charles Campbell – "USA South" 12862 Garden Grove Boulevard, Suite 260, Garden Grove, California 92643 Tel. # 714-537-5664.

[Northern California, Nevada]
John Heyer – "USA North" – 395A Civic Drive, Pleasant Hill, California 94523 Tel. # 415-798-9503.

REGION IX – [Utah, Wyoming, Montana]
Stephen Candia – "Blue Stake" – P.O. Box 30960, Salt Lake City, Utah 84125 Tel. # 801-237-7597.

[Colorado]
John Clavel – Mountain Bell – 6892 South Yosemite, Englewood, Colorado 80111 Tel. # 303-779-7706.

[Oregon, Washington, Idaho]
Tom Odegaard – "Utilities Underground Location Center" – 13547 Southeast 27th Place, Suite 3C, Bellevue, Washington 98005 Tel. # 206-747-4331.

LIAISON
Fred Walters – AT&T – 205 North Maple Avenue, Room 1234F2, Basking Ridge, New Jersey 07920 Tel. # 201-221-3275.

INTERNATIONAL REPRESENTATIVES

REGION I – CANADA – All Provinces and Territories
Jean Fortin – 1060 University Avenue, Room 435, Montreal, Canada
Tel. # 514-870-4763.

REPUBLIC OF CHINA – All Territories
Kenneth Hsi – Ministry of Communications – 42 Jeu Al Road, Section 1, Taipei, Taiwan, 100, Republic of China.

ASSOCIATE MEMBERS

John Shelton – Shelton Enterprise, Inc. – 3501 Newland Road, Baltimore, Maryland 21218.

Russell Whelchel – Panhandle Eastern Pipeline Company – 3695 South 6th Street, Springfield, Illinois 62703.

Charles Batchelder, Jr. – Applied Information Development, 823 Commerce Drive, Oak Brook, Illinois 60521.

ONE-CALL SYSTEMS

JANUARY 1, 1980

1. ALABAMA

1a MISS ALL (Alabama Line Location Center) –
Call Ctr. # 205-252-4444 Contact # 205-942-1104
55 Bagby Drive, Room 205, Birmingham, Alabama 35209
In-house/17 Members/Statewide

2. ALASKA

3. ARIZONA

3a BLUE STAKE (Phoenix) –
Call Ctr. # 602-263-1100 Contact # 602-263-3178
3033 No. 3rd Street, Room 912, Phoenix, Arizona 85012
Contract/10 Members/Phoenix Metro Area

3b SIERRA VISTA BLUE STAKE CENTER –
Call Ctr # 602-458-6900 Contact # 602-458-4705
c/o P.O. Box 310, Sierra Vista, Arizona 85635
Contract/4 Members/Sierra Vista Area

3c BLUE STAKE (Cottonwood and Sedona) –
Call Ctr # 602-634-2717 Contact # 602-445-3700
120 No. Marina, Prescott, Arizona 86301
In-house/8 Members/Cottonwood and Sedona Areas

3d BLUE STAKE (Prescott) –
Call Ctr # 602-778-0050 Contact # 602-445-5700
120 North Marina, Prescott, Arizona 86301
In-house/5 Members/Prescott Area

3e BLUE STAKE (Tucson) –
Call Ctr # 602-792-2211 Contact # 602-747-6578
P.O. Box 26500, Tucson, Arizona 85726
In-house/4 Members/Tucson Area

4. ARKANSAS

4a ONE CALL CENTER –
Call Ctr # 800-482-8998 Contact # 501-661-9372
5312 West Markham, Little Rock, Arkansas 72205
Contract/5 Members/13 Counties in Central Arkansas

5. CALIFORNIA

5a USA SOUTH (Underground Service Alert) –
Call Ctr # 800-422-4133 Contact # 714-537-5664
12862 Garden Grove Blvd., Suite 260, Garden Grove, California 92643
Contract/21 Members/9 Counties in Southern California

5b USA NORTH (Underground Service Alert) –
Call Ctr # 800-642-2444 Contact # 415-798-9503
395A Civic Drive, Pleasant Hill, California 94523
In-house/42 Members/34 Counties in Northern California

6. COLORADO

6a **GRAND JUNCTION UTILITY COORDINATING COMMITTEE**
Call Ctr # 303-245-2555 Contact # 303-243-2852
619 Main, Grand Junction, Colorado 81501
Contract/7 Members/Grand Valley Area
(Operational 2-1-80)

6b **BLUE STAKE –**
Call Ctr # 303-534-6700 Contact # 303-571-8334
1005 17th Street, Room 1130, Denver, Colorado 80201
In-house/3 Members/Denver Metro Area

7. CONNECTICUT

7a **CALL BEFORE YOU DIG, INC.–**
Call Ctr # 800-022-4455 Contact # 203-281-3702
295 Treadwell Street, Hamden, Connecticut 06514
Contract/241 Members/Statewide

8. DELAWARE

8a **MISS UTILITY OF DELMARVA –**
Call Ctr # 800-282-8555 (In DE.) Contact # 302-678-1421
800-441-8355 (Outside DE.)
146 South State Street, Dover, Delaware 19901
In-house/14 Members/Delmarva Peninsula

9. FLORIDA

9a **CALL CANDY –**
Call Ctr # 800-282-8881 Contact # 813-839-8881
4520 Oakellar Street, Tampa, Florida 33611
In-house/18 Members/7 Counties in Central West Florida

9b **CALL U.N.C.L.E. –**
Call Ctr. # 800-432-4770 Contact # 305-772-5380
6451 North Federal Highway, Fort Lauderdale, Florida 33308
In-house/17 Members/5 Counties in Southeast Florida

9c **UNDERGROUND UTILITIES NOTIFICATION CENTER –**
Call Ctr # 305-264-6820 Contact # 305-264-6878
666 NW 79th Avenue, Room 359, Miami, Florida 33126
In-house/11 Members/2 Counties in So. Florida

9d **CALL BEFORE YOU DIG –**
Call Ctr # 904-877-6688 Contact # 904-599-1275
P.O. Box 2214, Tallahassee, Florida 33204
In-house/3 Members/4 Counties In No. Florida

10. GEORGIA

10a **UTILITIES PROTECTION CENTER –**
Call Ctr # 904-877-6688 # 800-282-7411 (statewide-telco. only)
Contact # 404-325-5371
7 Executive Park Drive, Room 314, Atlanta, Georgia 30329
In-house/7 Members/10 Counties around Metro Atlanta

11. HAWAII

12. IDAHO

12a **PALOUSE EMPIRE UNDERGROUND COORDINATING COUNCIL –**
Call Ctr. # 208-882-1794 Contact # 208-882-5553
122 East 4th Street, Moscow, Idaho 83843
In-house/3 Members/Moscow & Latal Area

12b **LEWIS CLARK UTILITY COORDINATING COMMITTEE –**
Call Ctr # 208-746-0840 Contact # 208-746-0438
906 20th Street, Lewiston, Idaho 83501
Contract/5 Members/4 Counties

12c **DIG-LINE –**
Call Ctr # 208-343-6700 Contact # 208-385-2512
1310 West State, Boise, Idaho 83707
Contract/8 Members/Boise Area

13. ILLINOIS

13a **JULIE (Joint Utility Locating Information for Excavators) –**
Call Ctr # 800-892-0123 Contact # 815-740-4500
3033 West Jefferson, Joliet, Illinois 60435
Contract/20 Members/Statewide

13b **DIGGER (Chicago Utility Alert Network) –**
Call Ctr # 312-744-7000 Contact # 312-744-4062
121 North LaSalle, Room 802, Chicago, Illinois 60602
In-house/8 Members/Chicago Metro Area

14. INDIANA

14a **UTILITY LOCATIONS –**
Call Ctr. # 219-294-7000 Contact # 219-294-4247
P.O. Box 578, Elkhart, Indiana 36415
Contract/7 Members/Elkhart Area

14b **HAD-HELP –**
Call Ctr # 219-423-4357 Contact # 219-423-7000
City-County Bldg., # One East Main, Fort Wayne, Indiana 46802
Contract/10 Members/Allen County Area

14c **BE-A-WARE –**
Call Ctr # 812-232-9273 Contact # 812-232-5013
P.O. Box 2301, Terre Haute, Indiana 47802
Contract/10 Members/5 Counties

14d **UNITED UTILITIES PROTECTION SERVICE –**
Call Ctr # 513-397-4664 Contact # 513-397-4664
225 East 4th Street, Rm. 315, Cincinnati, Ohio 45202
In-house/2 Members/3 Counties !!

15. IOWA

16. KANSAS

16a **(Unnamed – Operation 1-1-80) –**
Contact # 316-268-4498
City Building, 455 North Main, 7th floor, Wichita, Kansas 67202
Contract/Wichita Area

17. KENTUCKY

17a **BUD (Before-U-Dig) –**
Call Ctr # 800-752-6007 Contact # 502-582-8239
1408 South 2nd Street, Louisville, Kentucky 40208
In-house/6 Members/Statewide

18. LOUISIANA

18a **DOTTIE (Dial One Time to Inform Everyone) –**
Call Ctr # 504-383-7474 Contact 504-344-3271
525 Florida Street, Room 402, Baton Rouge, Louisiana 10801
In-house/37 Members/Statewide

19. MAINE

19a **DIG-SAFE –**
Call Ctr # 800-225-4977 Contact # 617-743-1082
101 Huntingdon Avenue, Suite 1900, Boston, Mass 02199
In-house/16 Members/Maine, Mass., New Hampshire, Rhode Island, Vermont

20. MARYLAND

20a **MISS UTILITY –**
Call Ctr # 301-559-0100 Contact # 301-559-0119
6510 Riggs Road, Hyattsville, Maryland 20783
In-house/23 Members/Northern Va., Md., & Wash., D.C.

8a **MISS UTILITY OF DELMARVA**
(See 8a)

21. MASSACHUSETTS

19a **DIG-SAFE –**
(See 19a)

22. MICHIGAN

22a **MISS DIG –**
Call Ctr # 800-482-7171 (In Michigan) Contact # 313-549-5000
Ext. 240
312-647-7344 (Outside Michigan)
4600 Coolidge Hwy, Royal Oak, Michigan 46068
In-house/325 Members/Statewide

23. MINNESOTA

24. MISSISSIPPI

25. MISSOURI

25a TO BEGIN –
Call Ctr # 417-862-3446 Contact # 417-831-8501
Jewel P.O. Box 331, Springfield, MO 65801
In-house/6 Members/Springfield Area

26. MONTANA

27. NEBRASKA

27a ONE CALL COVERS ALL –
Call Ctr # 402-344-3565 Contact # 402-554-5403
100 So. 19th, Bldg. # 43, Omaha, Nebraska 68102
In-house/7 Members/Omaha (Statewide for tele. co. only)

27b ONE CALL –
Call Ctr # 402-477-0547 Contact # 402-477-0246
P.O. Box 81309, Lincoln, Nebraska 68501
In-house/4 Members/Lincoln Area

28. NEVADA

28a CAN YOU DIG IT –
Call Ctr # 702-385-1234 Contact # 702-876-7172
314 Las Vegas Blvd., North, Las Vegas, Nevada 89101
Contract/10 Members/Las Vegas

29. NEW HAMPSHIRE

19a DIG SAFE –
(See 19a)

30. NEW JERSEY

30a GARDEN STATE UNDERGROUND PLANT LOCATION SERVICE, INC. –
Call Ctr # 800-272-1000 (In N.J.) Contact # 201-232-9559
201-232-1232 (Outside N.J.)
2450 Westfield Avenue, Scotch Plains, New Jersey 07076
Contract/22 Members/Statewide

31. NEW MEXICO

31a BLUE STAKE (Farmington) –
Call Ctr # 505-327-3777 Contact # 505-325-2881
P.O. Box 750, Farmington, New Mexico 87401
In-house/4 Members/Farmington Area

31b BLUE STAKE (Grants) –
Call Ctr # 505-287-9292 Contact # 505-287-4444
P.O. Box 819, Grants, New Mexico 87020
In-house/6 Members/Grants Area

31c BLUE STAKE (Albuquerque) –
Call Ctr # 505-765-1234 Contact # 505-766-7441
P.O. Box 2267, Albuquerque, New Mexico 87103
In-house/5 Members/Albuquerque Area

31d BLUE STAKE (Gallup) –
Call Ctr # 505-863-3330 Contact # 505-863-9519
P.O. Box 338, Gallup, New Mexico 87301
In-house/3 Members/Gallup Area

31e BLUE STAKE (Las Cruces) –
Call Ctr # 505-523-5513 Contact # 505-524-3570
P.O. Box 1899, Las Cruces, New Mexico 88001
In-house/10 Members/Las Cruces Area

31f BLUE STAKE (Santa Fe) –
Call Ctr. # 505-988-8841 Contact # 505-982-4381 X 162
P.O. Box 1268, Santa Fe, New Mexico
In-House/5 Members/Santa Fe County

31g BLUE STAKE (Las Vegas) –
Call Ctr # 505-425-3898 Contact # 505-425-9345
P.O. Box 150, Las Vegas, New Mexico 87701
In-house/4 Members/Las Vegas Area

31h BLUE STAKE (Zuni) –
Call Ctr # 505-782-4411 Contact # 505-782-4411
P.O. Box 466, Zuni, New Mexico 87327
In-house/3 Members/Zuni Area

32. NEW YORK

32a **UTILITY COORDINATING COMMITTEE OF ROCHESTER** –
Call Ctr # 716-546-1100 Contact # 716-546-1100
89 East Avenue, Rochester, New York 14649
In-house/4 Members/Monroe County

32b **UNDERGROUND FACILITIES PROTECTION ORGANIZATION, INC.** –
Call Ctr # 800-962-7962 Contact # 315-437-7333
3650 James St., Syracuse, New York 13206
Contract/40 Members/38 Counties in Central & N.E. New York State

32c **UNDERGROUND UTILITIES LOCATING SERVICE** –
Call Ctr # 716-893-1133 Contact # 716-893-1133
65 Franklin Street, Room 402, Buffalo, New York 14202
Contract/5 Members/7 Counties in Western New York

32d **UNDERGROUND UTILITIES CALL CENTER** –
Call Ctr # 800-742-1780 Contact # 800-742-1780
3000 West Chester Avenue, Port Chester, New York 10573
In-House/12 Members/9 Counties In Mid-Hudson Area

32e **UTILITY CALL CENTER** –
Call Ctr # 516-661-6000 Contact # 516-661-6000
4600 Little East Neck Road, Babylon, New York 11702
Contract/2 Members/3 Counties-Long Island Area

33. NORTH CAROLINA

33a **UTILITY LOCATING COMPANY, INC. (ULOCO)** –
Call Ctr # 800-632-4949 Contact # 919-855-5760
2306 West Meadowview Road, Suite 110, Greensboro, North Carolina 27407
Contract/35 Members/Statewide

34. NORTH DAKOTA

35. OHIO

35a **OHIO UTILITIES PROTECTION SERVICE** –
Call Ctr # 800-362-2764 Contact # 216-744-5191
City Center One, 100 Federal Plaza East, Lower Level, Youngstown, Ohio 44503
Contract/28 Members/Statewide

14d **UNITED UTILITIES PROTECTION SERVICE** –
(See 14d)

36. OKLAHOMA

37. OREGON

37a **UMATILLA COUNTY UTILITIES COORDINATION COUNCIL** –
Call Ctr # 501-276-0202 Contact # 503-276-0657/2821
P.O. Box 118, Wallowa, Oregon 97885
Contract/Umatilla County

37b **WASCO COUNTY UNDERGROUND COUNCIL** –
Call Ctr # 503-298-5152 Contact # 503-298-2694
105 East 4th, The Dalles, Oregon 97058
Northern Half of Wasco County

37c **LINN-BENTON UCC** –
Call Ctr # 503-752-8631 Contact # 503-967-4315
P.O. Box 1108, Corvallis, Oregon 97330
Benton & Western Linn Counties

37d **LANE UCC** –
Call Ctr # 503-342-6676 Contact #
240 "A" Street, Springfield, Oregon 97447
Lane County, east of coast range

37e **DOUGLAS UCC** –
Call Ctr # 503-673-6676 Contact # 503-673-6646
P.O. Box 1214, Roseburg, Oregon 97470
Douglas County

37f **JOSEPHINE UCC** –
Call Ctr # 503-476-6676 Contact # 503-479-3386
P.O. Box 1469, Grants Pass, Oregon 97526
Josephine County

37g **ROUGE UCC** –
Call Ctr # 503-779-6676 Contact #
P.O. Box 165, Medford, Oregon 97501
Jackson County

37h **CENTRAL OREGON COORDINATING COUNCIL** –
Call Ctr # 503-392-6676 Contact # 503-392-6676
409 East Greenwood, Bend, Oregon 97701
Contract/3 Counties

37i **CURRY COORDINATING COUNCIL** –
Call Ctr # 503-469-2114 Contact #
P.O. Box 460, Coquille, Oregon 97432
South Curry County

37j **EAST LINN UCC** –
Call Ctr # 503-259-2992 Contact #
P.O. Box 1108, Corvallis, Oregon 97330
Eastern Linn County

37k **CITY OF DALLES UCC** –
Call Ctr # 503-623-2338

37l **WEST LANE UCC** – !!
Call Ctr. # 503-997-2251 Contact # 503-997-2251
P.O. Box 576 Florence, Oregon 97439
Lane Co. West of Coast Range

38. PENNSYLVANIA

38a **PENNSYLVANIA ONE-CALL SYSTEM, INC. (Call Kathy)** –
Call Ctr # 800-242-1776 (In-state) Contact # 412-323-7111
412-323-7100 (out of state)
One Allegheny Square, Suite 720, Pittsburgh, Pennsylvania
15212
Contract/30 Members/Statewide

39. RHODE ISLAND

19a **DIG-SAFE**
(See 19a)

40. SOUTH CAROLINA

40a **PALMETTO UTILITY LOCATION SERVICE** –
Call Ctr # 800-922-0983 Contact # 803-791-5367
1801 Charleston Highway, Charleston, South Carolina
Contract/23 Members/Statewide

41. SOUTH DAKOTA

42. TENNESSEE

42a **MISS LOCATE** –
Call Ctr # 901-725-1000 Contact # 901-725-1370
1544 Madison, Room B-8, Memphis, Tennessee 38104
In-house/1 Member/Metro Area

43. TEXAS

43a **UTILITY COORDINATING COMMITTEE FOR THE METROPOLITAN HOUSTON AREA** –
Call Ctr # 713-222-4567 Contact # 713-659-5111 Ext. 763
3100 Main Street, Houston, Texas 77001
In-House/4 Members/Houston Metro Area

43b **AUSTIN AREA UTILITY COORDINATING COUNCIL** –
Call Ctr # 512-478-1455 Contact # 512-477-6511 Ext. 2621
P.O. Box 1088, Austin, Texas 78767
In-House/5 Members/Austin Metro Area

44. UTAH

44a **JOINT UTILITIES PROTECTION CENTER (BLUE STAKE)** –
Call Ctr # 801-532-5000 (Salt Lake area)
800-662-4111 (all other areas)
70 South State Street, Salt Lake City, Utah 84125
In-House/8 Members/11 Counties

45. VERMONT

19a DIG-SAFE
(See 19a)

46. VIRGINIA

46a ROANOKE VALLEY UNDERGROUND LOCATION SERVICE –
Call Ctr # 703-982-2400 Contact # 703-563-0891
2001 Patterson Avenue, Roanoke, Virginia 24016
Contract/7 Members/Roanoke Area

46b MISS UTILITY OF VIRGINIA –
Call Ctr # 800-552-7001 Contact # 804-845-0104
3600 West Broad Street, Richmond, Virginia 23230
In-house/20 Members/Central Va. & Tidewater Area

46c MISS UTILITY OF LYNCHBURG –
Call Ctr # 804-528-4646 Contact # 804-847-7221
Allied Arts Building, Suite 206, Lynchburg, Virginia 24504
Contract/4 Members/Lynchburg & Campbell Co. area

8a MISS UTILITY OF DELMARVA –
(See 8a)

20a MISS UTILITY –
(See 20a)

47. WASHINGTON

47a CLARKE COUNTY UTILITY ONE-CALL –
Call Ctr. # 206-969-4848 Contact # 503-226-4211 ext. 214
123 Northwest Flanders Street, Portland, Oregon 97209
Contract/21 Members/Clarke County

47b INLAND EMPIRE UTILITY COORDINATING COUNCIL –
Call Ctr # 509-456-8000 Contact # 509-924-6083
P.O. Box 3727, Spokane, Washington 99220
Contract/15 Members/Spokane County

47c UTILITIES UNDERGROUND LOCATION CENTER –
Call Ctr. # 800-562-6478 Contact # 206-747-4311
13547 S.E. 27th Place, 3-C, Bellevue, Washington 98005
Contract/21 Members/King, Pierce, Thurston Counties

47d BENTON & FRANKLIN COUNTIES UCC –
Call Ctr # 509-547-1177 Contact # 509-547-3461
P.O. Box 2102, Pasco, Washington 98302
Contract/23 Members/Benton & Franklin Counties

47e SKAGIT COUNTY UCC –
Call Ctr # 206-424-3221 Contact # 206-336-5222
1609-B Broadway, Bellingham, Washington 98225
Contract/10 Members/Skagit County

47f UPPER YAKIMA COUNTY UNDERGROUND UTILITIES COUNCIL –
Call Ctr # 509-248-0202 Contact # 509-457-5905
P.O. Box 1729, Yakima, Washington 98902
Contract/15 Members/Upper Yakima County, north of Union Gap

47g DIAL DIG –
Call Ctr # 206-342-5344 Contact # 206-259-2111
Kelly's Telephone Svc., Everett, Washington 98201
Contract/20 Members/Western half of Snohimish County

47h ISLAND COUNTY UCC –
Call Ctr # 206-675-5500 Contact # 206-675-3388
1074 West Pioneer Way, Oak Harbor, Washington 98277
Contract/11 Members/Island Co.

47i LOWER YAKIMA VALLEY UCC –
Call Ctr # 509-837-2226 Contact # 509-837-2041
P.O. Box 267, Sunnyside, Washington 98944
Lower Yakima County

47j CHELAN-DOUGLAS UCC –
Call Ctr # 509-663-6111 Contact # 509-663-8781
P.O. Box 511, Wenatchee, Washington 98801
Contract/12 Members/Chelan-Douglas Counties

47k CLALLAM-JEFFERSON COUNTY UCC –
Call Ctr. # 206-457-6400 Contact # 206-452-9771
520 West Forest, Port Angeles, Washington 98362
Contract/11 Members/Clallam & Jefferson Counties

47l GRANT UTILITY COORDINATING COUNCIL –
Call Ctr # 509-765-6635 Contact # 509-754-3541
821 W. Broadway, Moses Lake, Washington 98837
Contract/10 Members/Grant County

47m GRAY'S HARBOR & PACIFIC COUNTY UCC –
Call Ctr # 206-532-3550 Contact 206-482-2812
P.O. Box 480, Aberdeen, Washington 98520
Contract/15 Members/Gray's Harbor & Pacific Counties

47n COWLITZ COUNTY UCC –
Call Ctr # 206-425-2506 Contact # 206-425-2500
960 Commerce Avenue, Long View, Washington 98632
Contract/9 Members/Cowlitz County

47o WALLA WALLA AREA UCC –
Call Ctr. # 509-529-6363 contact # 509-525-0510
P.O. Box 1577, Walla Walla, Washington, 99362
In-House/9 Members/Walla Walla Area

47p KITSAP COUNTY UTILITY COORDINATING COUNCIL –
Call Ctr # 206-479-4700
920 Park Avenue, Bremerton, Washington 98310
Contract/14 Members/Kitsap County

47q LEWIS COUNTY ONE-CALL –
Call Ctr # 206-736-3447 contact # 206-748-9121 ext 129
P.O. Box 899, Chelasis, Washington 98532
Contract/14 Members/Lewis County

47r WHATCOM UTILITIES –
Call Ctr # 206-734-2140 Contact # 206-733-5980
1609-B Broadway, Bellingham, Washington 98225
Contract/11 Members/Whatcom County

47s KLICKITHE-SKAMANIA COORDINATING COUNCIL –
Call Ctr # 509-493-3199 Contact #
P.O. Box 864, White Salmon, Washington 98672
Contract/18 Members/Klickithe-Skamania Counties

12b LEWIS CLARK UTILITY COORDINATING COMMITTEE –
(See 12b)

48. WEST VIRGINIA

48a CABLE PROTECTION BUREAU –
Call Ctr # 800-642-9009 Contact # 304-344-7419
1500 MacConkle Avenue, S.E., Charleston, West Virginia 25314
In-House/1 Member/Statewide

49. WISCONSIN

49a DANE COUNTY ONE CALL SYSTEM –
Call Ctr # 608-255-7700 Contact # 608-252-7151
P.O. Box 1231, Madison, Wisconsin 53701
In-House/8 Members/Dane County

49b DIGGERS HOTLINE –
Call Ctr # 414-344-5111 Contact # 414-344-7398
2040 West Wisconsin, Suite 565, Milwaukee, Wisconsin 53233
Contract/11 Members/6 Counties S.W. Wisconsin

50. WYOMING

50a WEST PARK COUNTY UTILITY COORDINATING COUNCIL –
Call Ctr # 307-587-4800 Contact # 307-587-2295
1338 Ramsey, Cody, Wyoming 82414
In-house/3 Members/Cody Area

50b CALLIN-DIG IN, SAFETY COMMISSION –
Call Ctr # 307-682-9811 Contact # 307-682-4304

50c FREMONT COUNTY UCC –
Call Ctr # 307-856-7555 Contact # 307-856-7355

50d CENTRAL WYOMING UCC –
Call Ctr # 307-265-5252 Contact # 307-235-2445

Contract

50e SWEETWATER CO. UCC –
Call Ctr # 307-362-8888 Contact # 307-362-2642

Contract

50f CARBON CO. UCC –
Call Ctr. # 307-324-6666 Contact # 307-324-2761

Contract

50g ALBANY CO. UCC –
Call Ctr # 307-742-3615 Contact # 307-766-2266
P.O. Box 3227, University Station, Laramie, Wyoming 82071
Contract/15 Members/Laramie Area

50h SOUTHEASTERN WYOMING UCC –
Call Ctr. # 307-638-6666 Contact # 307-635-6248
4719 Ridge Road, Cheyenne, Wyoming 82001
Contract/7 Members/Cheyenne Area

* * *

APPENDIX C

State of Virginia Legislation, "Underground Utility Damage Prevention Act (Chapter 10.3)"

CHAPTER 10.3.

UNDERGROUND UTILITY DAMAGE PREVENTION ACT.

(This chapter is effective July 1, 1980.)

Sec.
56-265.14. Short title.
56-265.15. Definitions.
56-265.16. Operators to file names of persons to be contacted locally.
56-265.17. Notification required prior to excavation or demolition.
56-265.18. Notification requirements.
56-265.19. Duty of operator upon notification.
56-265.20. When excavation begun; notice when marking not required.
56-265.21. Marking by color.
Sec.
56-265.22. Record of noticiation made by telephone required.
56-265.23. Exemption of excavation for routine maintenance.
56-265.24. Duties of excavator.
56-265.25. Liability of operator and excavator.
56-265.26. Emergency excavations exempted.
56-265.27. [Not set out.]
56-265.28. Sovereign immunity.
56-265.29. Other similar laws.

§ 56-265.14. Short title. — This chapter may be cited as the "Underground Utility Damage Prevention Act." (1979, c. 291.)

Effective date. — This chapter is effective July 1, 1980.

§ 56-265.15. Definitions. — As used in this chapter:

1. *"Damage"* shall mean any impact upon or removal of support from an underground facility as a result of excavation or demolition which according to the operating practices of the operator would necessitate the repair of such facility.

2. *"Demolish"* or *"demolition"* means any operation by which a structure or mass of material is wrecked, razed, rendered, moved, or removed by means of any tools, equipment, or discharge of explosives which could damage underground utility lines.

3. *"Emergency"* means any condition constituting a clear and present danger to life or property by reason of escaping of any material or substance transported by means of a utility line, as hereinafter defined, or by reason of exposed wires or other breaks or defects in an operator's utility line; or in the case of the State highway systems or streets and roads maintained by political subdivisions, where the use of such highways, roads, streets or other public ways is, in the judgment of duly authorized officials of the State Highway and Transportation Department or such political subdivisions, impaired by an unforeseen occurrence which necessitates repair beginning immediately after such occurrence.

4. *"Excavate"* or *"excavation"* means any operation in which earth, rock, or other material in the ground is moved, removed, or otherwise displaced by means of any tools, equipment, or explosives and includes, without limitation, grading, trenching, digging, ditching, dredging, drilling, augering, tunnelling, scraping, cable or pipe plowing and driving, wrecking, razing, rendering, moving, or removing any structure or mass of material, but not including the tilling of the soil for agricultural purposes.

5. *"Notify," "Notice"* or *"Notification"* mean the completed delivery of information to the person to be notified, and the receipt of same by such person to be notified within the time limits prescribed in this chapter. When the person to be notified is an operator, the notification shall be made to the person whose name is on file pursuant to § 56-265.16, and, when the notification is to be made by an operator in response to a notification it has received, such notification shall be made to the same person who notified the operator. Notification may be either orally or in writing, with written notification to be made by hand delivery, telegram, United States mail or by United States certified mail, return receipt requested.

6. *"Notification center"* means any organization among whose purposes is the dissemination to one or more operators the notification of planned construction activities in a specified area.

7. *"Operator"* means any person who furnishes or transports materials or services by means of a utility line.

8. *"Person"* means any individual, firm, joint venture, partnership, corporation, association, municipality, or other political subdivision, governmental unit, department or agency, and shall include any trustee, receiver, assignee, or personal representative thereof; provided, however, that nothing in this chapter shall apply to any excavation done by the owner of property when said excavation is made entirely on such land, provided there is no encroachment on any operator's rights-of-way or easements; provided, further, that nothing in this chapter shall apply to any excavation done by a railroad when said excavation is made entirely on the land which the railroad owns and on which the railroad operates, provided there is no encroachment on any operator's rights-of-way or easements.

9. *"Utility line"* means any item of public or personal property which is buried or placed below ground or submerged for use in connection with the storage or conveyance of water, sewage, electronic, telephonic, or telegraphic communications, electric energy, cable television, oil, petroleum products, gas, or other substances, and shall include but not be limited to pipes, sewers, conduits, cables, valves, lines, wires, manholes, attachments, and those portions of poles below ground.

10. *"Working day"* means every day, except Saturdays, Sundays, and legal State and national holidays. (1979, c. 291.)

§ 56-265.16. Operators to file names of persons to be contacted locally. — Every operator having the right to bury underground utility lines shall file with the clerk of the circuit court of the county or city in which its lines are located the names of the person or persons, in each county or city in the Commonwealth, to whom all calls concerning proposed excavation should be directed. Such names may be maintained by the clerk in his office in a manner to be determined at his discretion. For those counties or cities where a notification center exists, the notification center's telephone number shall be filed with the clerk of the circuit court of the county or city on behalf of all participating operators. The clerk of the circuit court with whom any notification required under this section is filed shall be entitled to a fee of two dollars per page of any document filed. (1979, c. 291.)

§ 56-265.17. Notification required prior to excavation or demolition. — No person shall make or begin any excavation or demolition without first notifying at least forty-eight hours, excluding Saturdays, Sundays, and legal State and national holidays, prior to the commencement of the proposed excavation or demolition, or within such time as agreed upon in writing at pre-construction meeting, every operator who may have underground utility lines in the area of the proposed excavation or demolition. In those counties and cities where a notification center exists, notification required by this subsection may be accomplished for participating operators by notifying the notification center within the time limits prescribed. When an operator requests a person to perform work with less than forty-eight hours notice, the operator shall be required to meet the notification requirements of this subsection. (1979, c. 291.)

§ 56-265.18. Notification requirements. — Every notice served by any person to an operator of an underground utility line or a notification center shall contain the following information:

1. The name of the individual serving such notice.
2. The location of the proposed work.
3. The name and telephone number of the excavator or excavator's company, where notification can be given.
4. The excavator's field telephone number, if one is available.
5. The type and extent of the proposed work.
6. The name of the person for whom the proposed work is being performed.
7. The approximate date and time when the work is to begin. (1979, c. 291.)

§ 56-265.19. Duty of operator upon notification. — A. If it is determined by an operator that a proposed excavation or demolition is planned within five feet of an underground utility line as measured in the horizontal plane, or if a proposed excavation or demolition by blasting is planned in such proximity to the underground utility line that the utility line may be destroyed, damaged, dislocated, or disturbed, the operator shall make at least two attempts to notify the person who proposes to excavate or demolish and shall mark the approximate horizontal location of the underground utility line on the ground to within two feet of either side of the underground utility line by means of stakes, paint, or other suitable means within forty-eight hours after the request, excluding Saturdays, Sundays, and legal State and national holidays. If one of the attempted notifications is telegram, or mailgram sent, or written notice left, at the address of the excavator or contractor, as such address appears on a notification under § 56-265.18, or in a current telephone book or in another public information source if such notification contains no address, such notice shall be deemed evidence of a sufficient attempt. In the case of extraordinary circumstances, if the operator is unable to mark the location within forty-eight hours, excluding Saturdays, Sundays, and legal State and national holidays, the operator shall notify the person who proposes to excavate or demolish and shall, in addition, notify the person of the date and time when the location will be marked. Such notification of inability to mark location shall be within twenty-four (24) hours, and the deferral to mark for extraordinary circumstances shall be within ninety-six (96) hours, unless a longer time is otherwise agreed.

B. An operator shall participate in all pre-planning and pre-construction meetings originated by state, county or municipal authorities relating to proposed construction projects which may affect the operator's existing or future utility lines and shall cooperate in implementing decisions reached in such pre-planning and pre-construction meetings. (1979, c. 291.)

§ 56-265.20. When excavation begun; notice when marking not required. — A. No person shall begin any excavation or demolition prior to the marking required by § 56-265.19 until four hours after an additional notification to an operator.

B. If the operator has no underground utility line within five feet of the proposed excavation or demolition as measured in the horizontal plane, or if a proposed excavation or demolition by blasting is not planned in such proximity to the operator's underground utility lines that the utility lines may be damaged, the operator shall notify within forty-eight hours, excluding Saturdays, Sundays, and legal State and national holidays, the person who proposes to excavate or demolish that the person may begin the excavation or demolition. (1979, c. 291.)

§ 56-265.21. Marking by color. — In marking the approximate location of underground utility lines the operator shall follow the color coding described herein:

UTILITY AND TYPE OF PRODUCT	IDENTIFYING COLOR OR EQUIVALENT
Electric Power Distribution & Transmission	Safety Red
Municipal Electric Systems	Safety Red
Gas Distribution & Transmission	High Visibility Safety Yellow
Oil & Petroleum Products Distribution & Transmission	High Visibility Safety Yellow
Dangerous Materials, Product Lines, Steam Lines	High Visibility Safety Yellow
Telephone & Telegraph Systems	Safety Alert Orange
Police & Fire Communications	Safety Alert Orange
Cable Television	Safety Alert Orange
Water Systems	Safety Precaution Blue
Slurry Systems	Safety Precaution Blue
Sewer Systems	Safety Green

(1979, c. 291.)

§ 56-265.22. Record of notification made by telephone required. — If the notification required by this chapter is made by telephone, a record of such notification shall be maintained by the operators or notification center notified to document compliance with the requirements of this chapter, and such records shall be maintained in compliance with the applicable statute of limitations. (1979, c. 291.)

§ 56-265.23. Exemption of excavation for routine maintenance. — Persons and operators excavating for routine maintenance, including "Patch" type paving, will not be required to comply with the notification and marking procedures of §§ 56-265.17, 56-265.18, 56-265.19, and 56-265.20 if:

1. They excavate within the limits of the original excavation; or on the traveled way, shoulders or drainage features of a public road, street, or highway and any excavation does not exceed twenty-four inches in depth below the grade existing prior to such excavation; or
2. They are replacing previously existing structures in their previous locations.

(1979, c. 291.)

§ 56-265.24. Duties of excavator. — A. Any person excavating within two feet of either side of the staked or marked location of an operator's underground utility line or demolishing by blasting in such proximity to the underground utility line that the utility line may be destroyed, damaged, dislocated or disturbed, shall take all reasonable steps necessary to properly protect, support and backfill underground utility lines. This protection shall include but may not be limited to hand digging, within the limits of the planned excavation or demolition, starting two feet of either side of the extremities of the underground utility line for other than parallel type excavations and at reasonable distances along the line of excavation for parallel type excavations.

B. In the event of any damage to, or dislocation, or disturbance of any underground utility line including its appurtenances, covering, and coating, in connection with any excavation or demolition, the person responsible for the excavation or demolition operations shall immediately notify the operator of the underground utility line and shall not backfill around the underground utility line until the operator has repaired the damage or has given clearance to backfill. The operator shall either commence repair of the damage or give clearance to backfill within twenty-four (24) hours, and upon his failure to commence or prosecute with diligence such repair or give clearance, the giving of clearance shall be presumed.

C. If the damage, dislocation, or disturbance of the underground utility line creates an emergency situation involving danger to life, health, or property, the person responsible for the excavation or demolition shall, in addition to complying with subsection B of this section, take immediate steps reasonably calculated to safeguard life and property. (1979, c. 291.)

§ 56-265.25. Liability of operator and excavator. — A. 1. If any properly marked underground utility line in accordance with § 56-265.19 is damaged by any person who has failed to comply with any provision of this chapter, that person shall be liable to the operator of the underground utility line for the total cost to repair the damaged facilities as that cost is normally computed by the operator.

2. If after receiving proper notice, an operator shall fail to discharge a duty imposed by any provision of this chapter and an underground utility line of such operator is damaged, as a proximate result of the operator's failure to discharge such duty, by any person who has complied with all of the provisions of this chapter, such person shall not be so liable; or

3. If an underground utility line of an operator is damaged by any person as the proximate result of the operator's failure to comply with any provision of this chapter, the operator shall be liable to such person for the total cost to repair any damage to the equipment or facilities of such person resulting from such damage to the operator's underground utility line.

B. Except as specifically set forth herein, the provisions of this chapter shall not be construed to either abrogate any rights, duties, or remedies existing under law or create any rights, duties, defenses, or remedies in addition to any rights, duties, or remedies existing under law. (1979, c. 291.)

§ 56-265.26. Emergency excavations exempted. — The provisions of this chapter shall not apply when making an excavation or demolition at times of an emergency as defined in § 56-265.15; provided all reasonable precaution has been taken to protect the underground utility lines. (1979, c. 291.)

§ 56-265.27: Not set out.

Code Commission note. — Section 56-265.27 is a severability clause. See Acts 1979, c. 291.

§ 56-265.28. Sovereign immunity. — Nothing in this chapter shall be construed to abrogate the immunity from suit accruing to the Commonwealth, her political subdivisions, agencies, officers or employees, or the officers or employees of her political subdivisions and agencies, as exists prior to July one, nineteen hundred eighty. (1979, c. 291.)

§ 56-265.29. Other similar laws. — Compliance with the provisions of this chapter shall not exempt any operator or person from the operation of any other applicable laws, ordinances, regulations, or rules of governmental and regulatory authorities having jurisdiction, unless exempted by such other laws, ordinances, regulations, or rules as a result of such compliance. (1979, c. 291.)

APPENDIX D

Accidents in which Automatic Shutoff Devices Could Have Favorably Influenced Outcome

For applicable accidents prior to 1972, see page 2 of Report No. NTSB-PSS-71-1, "Effects of Delay in Shutting Down Failed Pipeline Systems and Methods of Providing Shutdown."

Accident Date	Location	Event	Pressure	Casualties	Pipeline Type
10/30/72	Lake City, Minn.	Pullout	36 psig	6 fatal	3/4" steel
10/31/72	Maple Grove, Minn.	Coupling Pullout	60 psig	17 inj.	1" steel
2/15/76	Rudolph, Wisc.	Pullout Comp. Coupling	35 psig	1 fatal	Valve on 3/4" steel
6/19/76	Enola, Pa.	Outside Force Damage	52 psig	3 fatal	3/4" steel
8/24/76	West Hartford, N.Y.	Outside Force Damage	22 psig	1 fatal	1" steel
12/10/77	Tempe, Ariz.	Outside Force Damage	38 psig	1 fatal	1 3/4" P.E.
2/6/78	Oxon Hill, Md.	Vandalism	20 psig	6 inj.	3/4" steel
6/5/79	Detroit, Mich.	Bypassed with Hose; Hose Blew Off	--	1 fatal	7/8" plastic
7/25/79	Albuquerque, N.M.	Excavation damage; Comp. Pullout	38 psig	2 fatal	3/4" steel
8/15/79	Seat Pleasant, Md.	Pullout	18 psig	1 inj.	3/4" steel
10/13/79	Chrisman, Ill.	Backhoe hit line	28 psig	1 fatal	1 1/4" steel
10/24/79	Stanardsville, Va.	Backhoe Pullout	15 psig	13 inj.	1 1/4" steel
2/21/80	Cordele, Ga.	Pullout	22 psig	3 fatal, 5 inj.	1" steel

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Columbia Gas of Virginia,
Inc. natural gas explosion
and fire Standardsville,

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